IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant:	Pearce et al.	)
		)
For:	Mitigating Errors in a Distributed Speech Recognition Process	)
		)
Serial No.:	09/830,306	)
		)
Filed:	April 25, 2001	)
		)
Examiner:	Wozniak, J.	)
		)
Art Unit:	2626	)

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Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Attention: Board of Patent Appeals and Interferences

APPELLANTS' BRIEF

This brief is in furtherance of the NOTICE OF APPEAL, mailed on September 17, 2007.

Any fees required under § 1.17, and any required petition for extension of time for filing this brief and fees therefor, are dealt with in the accompanying TRANSMITTAL OF APPEAL BRIEF.

This brief contains these items under the following headings, and in the order set forth below (37 C.F.R. § 41.37(c)):

I REAL PARTY IN INTEREST

II RELATED APPEALS AND INTERFERENCES

III STATUS OF CLAIMS

IV STATUS OF AMENDMENTS

V SUMMARY OF CLAIMED SUBJECT MATTER

I. REAL PARTY IN INTEREST

The real party in interest in this appeal is Motorola, Inc., a Delaware corporation.

II. RELATED APPEALS AND INTERFERENCES

With respect to other appeals or interferences that will directly affect, or be directly affected by, or have a bearing on the Board's decision in this appeal, there are no such appeals or interferences.

III. STATUS OF CLAIMS

A. Status of all claims in the proceeding

1. Clams rejected: 1, 3, 4, 6, 7, 11-13, 15, 16, 18, 19 and 23-26
2. Claims allowed: 9, 10, 21 and 22
3. Claims withdrawn from consideration but not canceled: none
4. Claims objected to: none
5. Claims canceled: 2, 5, 8, 14, 17, 20 and 27-30

B. Identification of claims being appealed

The claims on appeal are: 1, 3, 4, 6, 7, 11-13, 15, 16, 18, 19 and 23-26

IV. STATUS OF ANY AMENDMENTS AFTER FINAL

No amendments have been filed after the most recent Office Action made final, dated May 16, 2007.

V. SUMMARY OF CLAIMED SUBJECT MATTER

A first aspect of the present invention (claim 1), which is being appealed, pertains to a method of mitigating errors in a distributed speech recognition process. The distributed speech recognition process is one in which speech recognition parameters are arranged in vectors, each vector corresponding to a particular sampling time-frame (FIG. 1; page 4, lines 30-32). Further, said speech recognition parameters are received at a second location having been transmitted from a first location (page 8, lines 2-7). The method includes identifying (210) a group comprising one or more of said vectors which have undergone a transmission error (page 8, lines 20-22). The method further includes replacing (220) one or more speech recognition parameters in the identified group of vectors, where said one or more speech recognition parameters in said identified group of vectors are replaced by respective replacement parameters corresponding to copies of one or more corresponding speech recognition parameters from a different vector, corresponding to a different particular sampling time frame, received without error after said identified group of vectors (page 9, lines 31-35).

A further aspect of the present invention (claim 3), which is being appealed, pertains to a method of mitigating errors in a distributed speech recognition process. The distributed speech recognition process is one in which speech recognition parameters are arranged in vectors, each vector corresponding to a particular sampling time-frame (FIG. 1; page 4, lines 30-32). Further said speech recognition parameters are received at a second location having been transmitted from a first location (page 8, lines 2-7). The method includes identifying (210) a group comprising one or more of said vectors which have undergone a transmission error (page 8, lines 20-22). The method further includes replacing (220) one or more speech recognition parameters in the identified group of vectors, wherein all the speech recognition parameters of each vector of said group are replaced by replacing the whole vectors, and each respective replaced whole vector is replaced by a copy of whichever of the preceding or following different vector,

corresponding to a different particular sampling time frame is received without error and is closest in receipt order to the vector being replaced (page 10, lines 23-27).

A still further aspect of the present invention (claim 13), which is being appealed, pertains to an apparatus for mitigating errors in a distributed speech recognition process. The distributed speech recognition process is one in which speech recognition parameters are arranged in vectors, each vector corresponding to a particular sampling time-frame (FIG. 1; page 4, lines 30-32). Further said speech recognition parameters are received at a second location having been transmitted from a first location (page 8, lines 2-7). The apparatus includes means (page 16, line 35 to page 17, line 5) for identifying (210) a group comprising one or more of said vectors which have undergone a transmission error (page 8, lines 20-22). The apparatus further includes means (page 16, line 35 to page 17, line 5) for replacing (220) one or more speech recognition parameters in the identified group of vectors, wherein said one or more speech recognition parameters in said identified group of vectors are replaced by respective replacement parameters corresponding to copies of one or more corresponding speech recognition parameters from a different vector, corresponding to a different particular sampling time frame, received without error after said identified group of vectors (page 9, lines 31-35).

In accordance with at least some aspects (claim 23) of the above noted apparatus (claim 13), which are being appealed, said means (page 16, line 35 to page 17, line 5) for identifying a group comprising one or more of said vectors which have undergone a transmission error (page 8, lines 20-22) includes means (page 16, line 35 to page 17, line 5) for predicting respective predicted values for said speech recognition parameters (page 15, lines 12-15), means (page 16, line 35 to page 17, line 5) for determining one or more threshold levels relative to the predicted values (page 15, lines 19-20), and means (page 16, line 35 to page 17, line 5) for identifying vector groups as having undergone a transmission error responsive to a weighted analysis of how many speech recognition parameters in a vector group are outside of each of said one or more threshold levels (page 15, lines 27-30).

In accordance with at least some aspects (claim 24) of the above noted apparatus (claim 13), which are being appealed, said means (page 16, line 35 to page 17, line 5) for identifying a group comprising one or more of said vectors which have undergone a transmission error (page 8, lines 20-

22) includes means (page 16, line 35 to page 17, line 5) for determining a difference between corresponding speech recognition parameters from different vectors within a vector group (page 16, lines 5-7), and means (page 16, line 35 to page 17, line 5) for identifying a vector group having undergone a transmission error responsive to an analysis of how many of said differences are outside of a predetermined threshold level (page 16, lines 10-12).

A still further aspect of the present invention (claim 15), which is being appealed, pertains to an apparatus for mitigating errors in a distributed speech recognition process. The distributed speech recognition process is one in which speech recognition parameters are arranged in vectors, each vector corresponding to a particular sampling time-frame (FIG. 1; page 4, lines 30-32). Further said speech recognition parameters are received at a second location having been transmitted from a first location (page 8, lines 2-7). The apparatus includes means (page 16, line 35 to page 17, line 5) for identifying (210) a group comprising one or more of said vectors which have undergone a transmission error (page 8, lines 20-22). The apparatus further includes means (page 16, line 35 to page 17, line 5) for replacing (220) one or more speech recognition parameters in the identified group of vectors, wherein all the speech recognition parameters of each vector of said group are replaced by replacing the whole vectors, and each respective replaced whole vector is replaced by a copy of whichever of the preceding or following different vector, corresponding to a different particular sampling time frame is received without error and is closest in receipt order to the vector being replaced (page 10, lines 23-27).

VI. GROUNDS OF REJECTION TO BE REVIEWED ON APPEAL

1. Whether claims 1, 3, 13, 15 and 25-26 have been improperly rejected under 35 U.S.C. 103(a) as being unpatentable over Jacobs et al. (US Patent No. 5,956,683) in view of Jeon et al. (US Patent No. 5,673,363).

2. Whether claims 4 and 16 have been improperly rejected under 35 U.S.C. 103(a) as being unpatentable over Jacobs et al., '683, and Jeon et al., '363, in further view of Ozawa (US Patent No. 5,305,332).

3. Whether claims 6, 7, 11, 12, 18, 19, 23 and 24 have been improperly rejected under 35 U.S.C. 103(a) as being unpatentable over Jacobs et al., '683, and Jeon et al., '363, in further view of Yeldener (US Patent No. 5,774,837).

VII. ARGUMENTS

A. Rejections under 35 U.S.C. §103

1. Whether claims 1, 3, 13, 15 and 25-26 have been improperly rejected under 35 U.S.C. 103(a) as being unpatentable over Jacobs et al. (US Patent No. 5,956,683) in view of Jeon et al. (US Patent No. 5,673,363).

Claims 1, 13, 25 and 26

In attempting to reject independent claims 1 and 13, the Examiner correctly asserts that Jacobs et al., '683, minimally fails to provide for any type of transmission error correction as is disclosed in the presently claimed invention. With respect to at least independent claims 1 and 13, the noted deficiency is alleged to be made known by Jeon et al., '363, where the Examiner further concludes that it would have been obvious to combine the same. However, the alleged combination of references fails to make known replacing the one or more speech recognition parameters (claims 1 and 13) and/or replacing the entire vector (claims 3 and 15) in the identified group of vectors, which have undergone a transmission error, with copies of one or more corresponding speech recognition parameters and/or entire vector from a different vector, corresponding to a different particular sampling time frame.

Jeon et al., '363, alternatively provides for the reconstruction of frequency coefficients of a frame where errors have occurred using predetermined weight values and frequency coefficients of one or more frames received without error, where the replacement frequency coefficient is determined by applying the weight value to the frequency coefficient from the frame received without error.

In addressing the applicants comments, the Examiner attempts to allege that Jeon et al., '363, discloses replacing error frames of parameters with copies of coefficients from future

frames without error. But then remarkably the Examiner attempts to further explain, that although the replacement parameters are weighted, that the weighted parameters are essentially copies, even if they are later weighted. It is noted that the value used to replace the value is the one that is weighted, consequently the weighting does not occur later. Furthermore the replacement value is not a copied value, but is a value that is computed, which can only have an equivalent value if the weighting value happens to be equal to one. Where the weighting value, mathematically, is generally identified as having a potential positive value less than or equal to one (i.e. $0 < w \leq 1$), the teachings are directed to a value that is less than one at least for the first weighting value α_1. Nevertheless, the value is never copied, but is taught always to be calculated using a weighting value, which as noted above will only have an equivalent value after being weighted, if the weighting value happens to be one.

Still further, in the cited reference, the replaced parameter is not replaced with a copy of the **corresponding** parameter from a different vector (i.e. C_9 replaced with C_9 from a different vector). In the cited reference it is not the corresponding parameter, but alternatively it is the last parameter S_m from the immediately prior frame that was received without error, which is used to replace the first parameter S_1 from the frame that was received with error, and only after being multiplied by the weight value α_1 (see col. 5, lines 5-10). The second parameter S_2 from the frame that was received with error is then determined from the reconstructed first parameter S_1 after being multiplied by the weight value α_2 (see col. 5, lines 10-12). Consequently, the replaced parameter not only is not a copy, but is not a copy of the corresponding parameter from the different vector. As a result, the combination of references fail to make known or obvious each and every feature of the independent claims 1 and 13, and indirectly each of the dependent claims (such as claims 25 and 26), which depend therefrom.

The fact that an effect similar to a replacement is mathematically possible (such as through the application of a weighting value of 1 to a coefficient) in view of piecemeal consideration of some of the articulated mathematical constraints is not the same as making known or obvious the claims of the present application. The actual teaching provided by way of example and explanation in the reference never results in a copied parameter value as provided by the claims of the present application. In essence, a teaching by the cited reference which does

not exclude the claimed subject matter is not the same as providing a corresponding teaching making the same known or obvious. The extra conditions and/or clarifications applied by the Examiner in an attempt to relate the reference's teachings to the claimed features of the present application, to the extent that they are not part of the original teachings of the reference serve to highlight the deficiencies of the original teachings for purposes of suggesting the claims of the present application would be obvious.

Claims 3 and 15

In addition to failing to make known or obvious replacing the one or more speech recognition parameters, as noted above with respect to the discussion of independent claims 1 and 13, Jeon et al., '363, similarly fails to make known or obvious replacing the entire vector as provided in claims 3 and 15, with respect to the identified group of vectors, which have undergone a transmission error, with a copy of an entire vector from a different vector, corresponding to a different particular sampling time frame, that is received without error. In fact, Jeon et al., '363, teaches away from such a claimed feature, where the replacement of a total frame is deemed to not be proper (see col. 2, lines 46-51). Furthermore, as noted above, the respective parameters in any frame received with an error are not determined from an entire vector received without error but only from the last parameter from the prior vector, wherein the last parameter is multiplied with a weight value α_1 for determining the first parameter in the replacement vector, where subsequent parameter values in the replacement vector are determined by multiplying the newly determined first (and subsequently determined parameters) by still further weight values (see col. 5, lines 5-12). As such Jeon et al., '363,in combination with Jacobs et al., '683, similarly fails to make known or obvious each and every feature of independent claims 3 and 15, as well as any claim which depends therefrom, and therefore cannot be said to reasonably result in the claims being obvious in view of the respective teachings.

2. Whether claims 4 and 16 have been improperly rejected under 35 U.S.C. 103(a)

as being unpatentable over Jacobs et al., '683, and Jeon et al., '363, in further view of Ozawa (US Patent No. 5,305,332).

Claims 4 and 16

To the extent that independent claims 3 and 15 are neither anticipated nor obviated by the cited reference for the reasons noted above, claims 4 and 16, which depend therefrom are similarly neither anticipated nor obviated by the cited references. Ozawa, '332, fails to account for the above noted deficiencies with respect to claims 3 and 15.

3. Whether claims 6, 7, 11, 12, 18, 19, 23 and 24 have been improperly rejected under 35 U.S.C. 103(a) as being unpatentable over Jacobs et al., '683, and Jeon et al., '363, in further view of Yeldener (US Patent No. 5,774,837).

Claims 6, 7, 18 and 19

To the extent that independent claims 1 and 13 are neither anticipated nor obviated by the cited reference for the reasons noted above, claims 6, 7, 18 and 19, which depend therefrom are similarly neither anticipated nor obviated by the cited references. Yeldener et al., '837, fails to account for the above noted deficiencies with respect to claims 3 and 15.

Claims 11, 12, 23 and 24

However with respect to claims 11, 12, 23 and 24, attempting to apply an alleged teaching where if one parameter does not satisfy a threshold condition, then changing parameters, is not the same as making a determination based upon how many speech recognition parameters in a vector group are outside of each of said one or more threshold levels. In other words, applying changes based upon a detected one, is not the same as making a determination of how many and/or making a determination based upon how many.

Consequently, the Examiner has failed to make known or obvious each and every feature of claims 11, 12, 23 and 24 in addition to the reasons already noted above with respect to

independent claims 1 and 13.

Conclusion

Because the combination of references being relied upon fail to make known each and every feature of the claims, either alone, or taken together, than the rejections fall short of meeting the minimal requirements for such a rejection. As such, the rejections should be withdrawn as being improper. The applicants would respectfully request that the Examiner's decision to finally reject the presently pending claims be overturned, and that the claims be permitted to proceed to allowance.

Respectfully submitted,

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VIII. APPENDIX OF CLAIMS

The following is the text of the claims involved in this appeal:

1. A method of mitigating errors in a distributed speech recognition process, the distributed speech recognition process being one in which speech recognition parameters are arranged in vectors, each vector corresponding to a particular sampling time-frame, and said speech recognition parameters are received at a second location having been transmitted from a first location;

the method comprising the steps of:

identifying a group comprising one or more of said vectors which have undergone a transmission error; and

replacing one or more speech recognition parameters in the identified group of vectors, wherein said one or more speech recognition parameters in said identified group of vectors are replaced by respective replacement parameters corresponding to copies of one or more corresponding speech recognition parameters from a different vector, corresponding to a different particular sampling time frame, received without error after said identified group of vectors.

2. (canceled)

3. A method of mitigating errors in a distributed speech recognition process, the distributed speech recognition process being one in which speech recognition parameters are

arranged in vectors, each vector corresponding to a particular sampling time-frame, and said speech recognition parameters are received at a second location having been transmitted from a first location;

the method comprising the steps of:

identifying a group comprising one or more of said vectors which have undergone a transmission error; and

replacing one or more speech recognition parameters in the identified group of vectors, wherein all the speech recognition parameters of each vector of said group are replaced by replacing the whole vectors, and each respective replaced whole vector is replaced by a copy of whichever of the preceding or following different vector, corresponding to a different particular sampling time frame is received without error and is closest in receipt order to the vector being replaced.

4. A method according to claim 3, wherein a mode of transmission and a mode of error detection are such that said identified group comprises a pair of consecutive vectors, such that the first vector of said pair is replaced by the second vector of a preceding vector without error and the second vector of said pair is replaced by the first vector of a following vector without error.

5. (canceled)

6. A method according to claim 1, wherein determination of which speech recognition parameter or parameters are to be replaced is performed by predicting, from vectors received without error, a predicted value for each speech recognition parameter within said identified group of vectors, and replacing those speech recognition parameters within the identified group of vectors which are outside of a predetermined threshold relative to their respective predicted value.

7. A method according to claim 6, wherein if more than a specified number of speech recognition parameters within said identified group of vectors are outside of their respective predetermined thresholds then all the speech recognition parameters of said identified group of vectors are replaced.

8. (canceled)

9. A method of mitigating errors in a distributed speech recognition process, the distributed speech recognition process being one in which speech recognition parameters are arranged in vectors, each vector corresponding to a particular sampling time-frame, and said speech recognition parameters are received at a second location having been transmitted from a first location, the method comprising the steps of:

identifying a group comprising one or more of said vectors which have undergone a transmission error; and

replacing one or more speech recognition parameters in the identified group of vectors, wherein said one or more speech recognition parameters in said identified group of vectors are replaced by respective replacement parameters corresponding to one or more speech recognition parameters from a different vector, corresponding to a different particular sampling time frame, received without error after said identified group of vectors;

wherein determination of which speech recognition parameter or parameters are to be replaced is performed by predicting, from vectors received without error, a predicted value for each speech recognition parameter within said identified group of vectors, and replacing those speech recognition parameters within the identified group of vectors which are outside of a predetermined threshold relative to their respective predicted value; and

wherein those speech recognition parameters which are within a predetermined threshold relative to their respective predicted value are compared with a set of reference vectors to find a best match vector from said set of reference vectors, and those speech recognition parameters which are outside of a predetermined threshold relative to their respective predicted value are replaced by corresponding speech recognition parameters from said best match vector.

10. A method according to claim 9, wherein speech recognition parameters from one or more neighbouring vectors are also compared with the set of reference vectors and the best match with respect to a plurality of consecutive reference vectors is chosen.

11. A method according to claim 1, wherein said step of identifying a group comprising one or more of said vectors which have undergone a transmission error includes a

step of predicting respective predicted values for said speech recognition parameters, determining one or more threshold levels relative to the predicted values, and identifying vector groups as having undergone a transmission error responsive to a weighted analysis of how many speech recognition parameters in a vector group are outside of each of said one or more threshold levels.

12. A method according to claim 1, wherein said step of identifying a group comprising one or more of said vectors which have undergone a transmission error includes a step of determining a difference between corresponding speech recognition parameters from different vectors within a vector group, and identifying a vector group having undergone a transmission error responsive to an analysis of how many of said differences are outside of a predetermined threshold level.

13. An apparatus for mitigating errors in a distributed speech recognition process, the distributed speech recognition process being one in which speech recognition parameters are arranged in vectors, each vector corresponding to a particular sampling time-frame, and said speech recognition parameters are received at a second location having been transmitted from a first location;

the apparatus comprising:

means for identifying a group comprising one or more of said vectors which have undergone a transmission error; and

means for replacing one or more speech recognition parameters in the identified group of vectors, wherein said one or more speech recognition parameters in said identified group of vectors are replaced by respective replacement parameters corresponding to copies of one or more corresponding speech recognition parameters from a different vector, corresponding to a different particular sampling time frame, received without error after said identified group of vectors.

14. (canceled)

15. An apparatus for mitigating errors in a distributed speech recognition process, the distributed speech recognition process being one in which speech recognition parameters are arranged in vectors, each vector corresponding to a particular sampling time-frame, and said speech recognition parameters are received at a second location having been transmitted from a first location;

the apparatus comprising:

means for identifying a group comprising one or more of said vectors which have undergone a transmission error; and

means for replacing one or more speech recognition parameters in the identified group of vectors, wherein all the speech recognition parameters of each vector of said group are replaced by replacing the whole vectors, and each respective replaced whole vector is replaced by a copy of whichever of the preceding or following different vector, corresponding to a different

particular sampling time frame is received without error and is closest in receipt order to the vector being replaced.

16. An apparatus according to claim 15, wherein a mode of transmission and a mode of error detection are such that said identified group comprises a pair of consecutive vectors, such that the first vector of said pair is replaced by the second vector of a preceding vector without error and the second vector of said pair is replaced by the first vector of a following vector without error.

17. (canceled)

18. An apparatus according to claim 13, wherein determination of which speech recognition parameter or parameters are to be replaced is performed by predicting, from vectors received without error, a predicted value for each speech recognition parameter within said identified group of vectors, and replacing those speech recognition parameters within the identified group of vectors which are outside of a predetermined threshold relative to their respective predicted value.

19. An apparatus according to claim 18, wherein if more than a specified number of speech recognition parameters within said identified group of vectors are outside of their respective predetermined thresholds then all the speech recognition parameters of said identified group of vectors are replaced.

20. (canceled)

21. An apparatus for mitigating errors in a distributed speech recognition process, the distributed speech recognition process being one in which speech recognition parameters are arranged in vectors, each vector corresponding to a particular sampling time-frame, and said speech recognition parameters are received at a second location having been transmitted from a first location, the apparatus comprising:

means for identifying a group comprising one or more of said vectors which have undergone a transmission error; and

means for replacing one or more speech recognition parameters in the identified group of vectors, wherein said one or more speech recognition parameters in said identified group of vectors are replaced by respective replacement parameters corresponding to one or more speech recognition parameters from a different vector, corresponding to a different particular sampling time frame, received without error after said identified group of vectors;

wherein determination of which speech recognition parameter or parameters are to be replaced is performed by predicting, from vectors received without error, a predicted value for each speech recognition parameter within said identified group of vectors, and replacing those speech recognition parameters within the identified group of vectors which are outside of a predetermined threshold relative to their respective predicted value; and

wherein those speech recognition parameters which are within a predetermined threshold relative to their respective predicted value are compared with a set of reference vectors to find a

best match vector from said set of reference vectors, and those speech recognition parameters which are outside of a predetermined threshold relative to their respective predicted value are replaced by corresponding speech recognition parameters from said best match vector.

22. An apparatus according to claim 21, wherein speech recognition parameters from one or more neighbouring vectors are also compared with the set of reference vectors and the best match with respect to a plurality of consecutive reference vectors is chosen.

23. An apparatus according to claim 13, wherein said means for identifying a group comprising one or more of said vectors which have undergone a transmission error includes means for predicting respective predicted values for said speech recognition parameters, means for determining one or more threshold levels relative to the predicted values, and means for identifying vector groups as having undergone a transmission error responsive to a weighted analysis of how many speech recognition parameters in a vector group are outside of each of said one or more threshold levels.

24. An apparatus according to claim 13, wherein said means for identifying a group comprising one or more of said vectors which have undergone a transmission error includes means for determining a difference between corresponding speech recognition parameters from different vectors within a vector group, and means for identifying a vector group having undergone a transmission error responsive to an analysis of how many of said differences are outside of a predetermined threshold level.

25. An apparatus according to claim 13, wherein said speech recognition parameters are transmitted from said first location to said second location over a radio communications link.

26. A method according to claim 1, wherein said speech recognition parameters are transmitted from said first location to said second location over a radio communications link.

27-30. (canceled)

IX EVIDENCE APPENDIX

None

X RELATED PROCEEDINGS APPENDIX

None